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Agricultural Water Security: The Need To Maintain Adequate Water Supplies To Meet the Food And Fiber Needs of an Expanding Population

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As population continues to increase across the United States and around the world, there is a growing demand for safe, reliable sources of water to meet the needs of the expanding population. Farmers, ranchers, and rural communities are particularly susceptible to the mounting pressures to provide more water to urban and urbanizing areas at the expense of water supplies in rural and agricultural communities. *Agricultural water security* is used here to describe the need to maintain adequate water supplies to meet the food and fiber needs of the expanding population – maximizing the efficiency of water use by farmers, ranchers, and rural communities.

Drought and the reliability of water supplies for agriculture and rural communities historically have been linked to western states. However, issues surrounding agricultural water security have expanded beyond western states and now represent a national crisis. Water supplies for irrigated agriculture in Georgia, South Carolina, and Florida are being consumed by expanding urban populations. Shifts in the allocation of these water resources could have dramatic impacts on the long-term supply of food and fiber in the United States.

On June 5, 2003 Interior Secretary Gale A. Norton and Agriculture Secretary Ann M. Veneman signed a Memorandum of Understanding (MOU) aimed at promoting improved water management and rapid response to emerging water supply shortages in the West. This MOU highlights the need for expanding the research and education programs focused on better management of water resources. The MOU also sets the stage for improved cooperation between the Departments.

This document provides a summary description of the research and education needs to address questions associated with Agricultural Water Security. Concepts and programs identified here would be developed in cooperation with other USDA agencies and the Department of Interior in support of the recently signed MOU.

Research Needs. There is considerable scientific information regarding the efficient use of water for agricultural irrigation. Similarly, much is known about the impacts of drought on plant growth and productivity. This proposed program will focus on expanding the knowledge base of agricultural water security through research programs aimed at:

- Risk assessment associated with drought – links to global change;
- Risk management for farmers and ranchers facing impacts of drought;
- Economics of water supply and water conservation;
- The role of water banks – environmental credit trading opportunities;

- Development of drought tolerant or water conserving plant species for agriculture and landscaping; and
- Impacts of water reuse on downstream water supplies – does upstream efficiency lead to decreased supply downstream?

Educational Needs. Vast amounts of educational materials exist for improving water conservation and water management. Much of this information has not been adapted to local watershed conditions. Moreover, citizens often fail to recognize their role in advancing or threatening agricultural water security. Agricultural Water Security could provide outreach and education programs aimed at:

- Understanding the limits of water supply in western watersheds;
- Improved/expanded application of known/existing science for irrigation and water management through educational programs;
- Place-based education – eliminating sub-tropical lifestyles in desert climates;
- Educating water managers – impacts of water supply will be disproportionately felt by lower income families;
- Educating landscapers – use of drought tolerant trees, reduce/eliminate turf and lawns, use of drip irrigation (instead of sprinklers), reuse of irrigation water;
- Educating residential pool designers – how can we develop pools that serve the recreational need and minimize water losses;
- Educating the public (adults) – public service ads, include water supply as part of the local television/radio weather reports, campaigns to convert toilets and showers to water conserving models; and
- Educating the public (youth) – building water conservation as part of the basic curriculum, assisting with “waterwise” school programs.

The Next Step. We will propose a new research and education initiative in support of Agricultural Water Security. The research component of this program will focus on expanding the knowledge base of agricultural water security by exploring solutions to drought, improved water management, and economics of water supply. The outreach/education component of this program will be conducted in cooperation with the Department of Interior. The goal of this component of the program is to educate citizens about the need to conserve water, the importance of water use in agricultural production, and the importance of place-based education for agricultural water security.